Notice of Allowability	Application No.	Applicant(s)	
	10/685,089	GERLACH, TOBIAS	
	Examiner	Art Unit	
	John H Le	2863	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☐ This communication is responsive to _____.

2. ☒ The allowed claim(s) is/are *1-12*.

3. ☒ The drawings filed on *07 October 2003* are accepted by the Examiner.

4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☒ All b) ☐ Some* c) ☐ None of the:
      1. ☒ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date 10/07/03&10/29/03
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____.
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

Reasons for Allowance

1. Claims 1-12 are allowed.

2. The following is an examiner's statement of reasons for allowance:

In combination with other limitations of the claims, the cited prior arts fails to teach steps of comparing the magnitude of the digitally sampled armature current signal value corresponding to a current sampling time point and the magnitudes of selected ones of the digitally sampled armature current signal values corresponding to previous sampling time points in a time interval containing the current and previous sampling time points; generating a rising slope detection signal if the comparison is indicative of an increasing tendency in the magnitudes of the digitally sampled armature current signal values over the time interval, the rising slope detection signal being indicative of a rising current ripple slope; and generating a falling slope detection signal if the comparison is indicative of a decreasing tendency in the magnitudes of the digitally sampled armature current signal values over the time interval, the falling slope detection signal being indicative of a falling current ripple slope, as recited in claim(s) 1.

U.S. Patent No. 6,144,179 discloses a permissible reference time range and to make allowance in the evaluation unit for the results of the in-parallel analysis of the variation of the motor current ripple over time if they are within the reference time. The quantities other than motor current and motor voltage required for the motor state model are either stipulated or derived from the motor current and motor voltage curves and adapted accordingly. '179 fails to specify the steps of comparing the magnitude of the digitally sampled armature current signal value corresponding to a current sampling

time point and the magnitudes of selected ones of the digitally sampled armature current signal values corresponding to previous sampling time points in a time interval containing the current and previous sampling time points; generating a rising slope detection signal if the comparison is indicative of an increasing tendency in the magnitudes of the digitally sampled armature current signal values over the time interval, the rising slope detection signal being indicative of a rising current ripple slope; and generating a falling slope detection signal if the comparison is indicative of a decreasing tendency in the magnitudes of the digitally sampled armature current signal values over the time interval, the falling slope detection signal being indicative of a falling current ripple slope, as now recited in claim 1 of the present invention.

U.S. Patent No. 4,881,174 discloses a device for high resolution measurement of frequency of a sinusoidal signal generated by a signal generator using an analog to digital converter to digitize the signal at an adjustable sampling frequency for a period defined by a given zero transition. The frequency is proportional to the number of samples taken within the measured period adjusted by a mathematical relationship between the absolute values of the sampled signal before and after the zero transition. '174 fails to specify the steps of comparing the magnitude of the digitally sampled armature current signal value corresponding to a current sampling time point and the magnitudes of selected ones of the digitally sampled armature current signal values corresponding to previous sampling time points in a time interval containing the current and previous sampling time points; generating a rising slope detection signal if the comparison is indicative of an increasing tendency in the magnitudes of the digitally

sampled armature current signal values over the time interval, the rising slope detection signal being indicative of a rising current ripple slope; and generating a falling slope detection signal if the comparison is indicative of a decreasing tendency in the magnitudes of the digitally sampled armature current signal values over the time interval, the falling slope detection signal being indicative of a falling current ripple slope, as now recited in claim 1 of the present invention.

U.S. Patent No. 4,639,648 discloses a three-phase brushless motor in which two electromagnetic transducer elements for detecting the rotational position of a rotor are disposed so as to produce a composite signal having a phase difference of 120 degree relative to the output signals from the electromagnetic transducer elements, and the output signals from the two electromagnetic transducer elements and the composite signal are used to determine drive currents fed to the stator coils. The rotor includes auxiliary magnetic poles having opposite polarities to those of main magnetic poles and are disposed in the rotor opposite the electromagnetic transducer elements at positions with an electrical angle of +-45 degree from the boundary between respective North poles and South poles of the main magnetic poles, whereby waveforms of the composite signal and the output signals from the electromagnetic transducer elements have a steep slope at zero crossing points. '648 fails to specify the steps of comparing the magnitude of the digitally sampled armature current signal value corresponding to a current sampling time point and the magnitudes of selected ones of the digitally sampled armature current signal values corresponding to previous sampling time points in a time interval containing the current and previous sampling time points; generating a

rising slope detection signal if the comparison is indicative of an increasing tendency in the magnitudes of the digitally sampled armature current signal values over the time interval, the rising slope detection signal being indicative of a rising current ripple slope; and generating a falling slope detection signal if the comparison is indicative of a decreasing tendency in the magnitudes of the digitally sampled armature current signal values over the time interval, the falling slope detection signal being indicative of a falling current ripple slope, as now recited in claim 1 of the present invention.

U.S. Patent No. 3,766,560 discloses the digital signals indicating rotational position of the antenna are generated by magnetic pickup heads, which engage rotating gears mounted on an antenna shaft driven by the motor gear box combination. The signals generated by the magnetic pickup head occur once for each rotation of the antenna. The device provides a single pulse identified with each sinusoid peak found at terminal requires the elimination of signals resulting from the back lobe response of the directional antenna. When sinusoid peaks larger than the quiescent value on node occur at terminal, they are AC coupled by the capacitor and the resistor into a high gain operational amplifier which serves the function of a zero crossing detector, that is, capacitor together with the low input impedance of operational amplifier serve as a differentiating network which provides a signal of zero magnitude into operational amplifier at the time when the sinusoid peak received from node goes through an interval of zero slope change. '560 fails to specify the steps of comparing the magnitude of the digitally sampled armature current signal value corresponding to a current sampling time point and the magnitudes of selected ones of the digitally sampled

armature current signal values corresponding to previous sampling time points in a time interval containing the current and previous sampling time points; generating a rising slope detection signal if the comparison is indicative of an increasing tendency in the magnitudes of the digitally sampled armature current signal values over the time interval, the rising slope detection signal being indicative of a rising current ripple slope; and generating a falling slope detection signal if the comparison is indicative of a decreasing tendency in the magnitudes of the digitally sampled armature current signal values over the time interval, the falling slope detection signal being indicative of a falling current ripple slope, as now recited in claim 1 of the present invention.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Contact Information

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John H. Le whose telephone number is 571-272-2275. The examiner can normally be reached on 7:00 - 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E Barlow can be reached on 571-272-2269. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

John H. Le

Patent Examiner-Group 2863

October 1, 2004

John Barlow
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